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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/497,508	02/04/2000	Jin Jang	8733.20079	7572
30827 7590 04/17/2007 MCKENNA LONG & ALDRIDGE LLP 1900 K STREET, NW WASHINGTON, DC 20006			EXAMINER LOUIE, WAI SING	
			ART UNIT	PAPER NUMBER
			2814	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		04/17/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	09/497,508	JANG ET AL.	
	Examiner	Art Unit	
	Wai-Sing Louie	2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 January 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyanaga et al. (US 5,932,893) in view of Fonash et al. (US 5,994,164).

With regard to claim 9, Miyanaga et al. disclose a semiconductor device having doped polycrystalline layer (col. 11, line 8 to col. 21, line 45) comprising:

- Containing metal atoms, nickel, having a density range of 1×10^{17} to 1×10^{20} atoms/cm³ on average, where the metal is a catalyst for metal induced crystallization of amorphous silicon (col. 8, lines 41-60, col. 11, lines 44-46 and fig. 4);
- The polycrystalline silicon film 104 is formed on an insulating substrate 101 (col. 11, lines 51-63);
- An insulating (buffer) layer 102 between the substrate 101 and the crystalline (polycrystalline) silicon film 104 (fig. 1a);
- The polycrystalline silicon film comprises a uniform distribution of the crystallites is needle-like (col. 6, lines 1-3; col. 7, lines 31-35; and col. 18, line 62 to col. 19, line 10), where the needle-shaped silicon crystallites are formed by

migration (movement) of a silicide of the metal (col. 7, lines 31-35 and col. 11, lines 44-46)

- The polycrystalline silicon film is formed by crystallizing an amorphous silicon film containing the metal by a thermal treatment (annealing) by lamp heating (lamp produces an electric field) efficiently absorbed by silicon film (col. 11, line 64 to col. 12, line 3). The annealing is at 550°C (col. 11, line 56). Since the applicant has not established the criticality of annealing temperature stated and since these temperatures are in common use in similar devices in the art, it would have been obvious to one of ordinary skill in the art to use these values in the device. Where patentability is said to be based upon particular chosen dimension or upon another variable recited in a claim, the applicant must show that the chosen dimensions are critical. In re Woodruff, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990);
- Miyanaga et al. do not disclose electrical conductivity activation energy between 0.52 to 0.71 eV. However, Fonash et al. provide an evidence of forming a polycrystalline film with nickel as a catalyst element at low temperature annealing (Fonash col. 3, lines 38-49), where the conductivity activation energy is 0.52 eV @ 290°C (Fonash fig. 8b). Therefore, it would have been obvious in light of the teaching of Fonash et al., to form polysilicon film with the presence of nickel, that the claimed activation energy is achieved when polycrystalline film has nickel as catalyst. Since the applicant has not established the criticality of the activation energy stated and since these values are in common use in similar devices in the

art, it would have been obvious to one of ordinary skill in the art to use these values in the device. Where patentability is said to be based upon particular chosen dimension or upon another variable recited in a claim, the applicant must show that the chosen dimensions are critical. *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990);

- *Miyanaga et al.* modified by *Fonash et al.* do not disclose applying an electrical field with metal electrodes and the needle-shaped silicon crystallites are formed by movement of a silicide of the metal. However, “applying an electrical field with metal electrodes” and “the needle-shaped silicon crystallites are formed by movement of a silicide of the metal” are process limitations, which does not carry any patentable weight. A “product by process” claim is direct to the product *per se*, no matter how actually made. See *In re Thorpe et al.*, 227 USPQ 964 (CAFC, 1985) and the related case law cited therein which makes it clear that it is the final product *per se* which must be determined in a “product by process” claim, and not the patentability of the process, and that, as here, an old or obvious product produced by a new method is not patentable as a product, whether claimed in “product by process” claims or not. As stated in *Thorpe*,

even though product by process claims are limited by and defined by the process, determination of patentability is based on the product itself. *In re Brown*, 459 F.2d 1345, 1348, 162 USPQ 145, 147 (CCPA 1969); *Buono v. Yankee Maid Dress Corp.*, 77 F.2d 274, 279, 26 USPQ 57, 61 (2d. Cir. 1935).

Note that applicant has burden of proof in such cases as the above case law makes clear.

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With regard to claim 10, Miyanaga et al. disclose the metal is cobalt instead of nickel (col. 3, lines 28-29).

With regard to claim 11, Miyanaga et al. disclose the nickel metal works as a catalyst during crystallization (col. 11, lines 10-21).

Response to Arguments

Applicant's arguments filed 2/6/06 have been fully considered but they are not persuasive:

- Applicant argues claim 9 is allowable over the prior art Miyanaga et al., and Fonash et al. Applicant argues that none of the cited references, singly or in combination, teaches or suggests the “the thermal treatment carried in a temperature of about 400 to 500°C and applying an electrical field with metal electrodes”. However, Miyanaga et al. disclose the annealing temperature is about 550°C (col. 11, line 56). Applying an electrical field with metal electrodes is an process limitation. Therefore, Miyanaga et al. and Fonash et al. disclose the claimed invention in claim 9.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after

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the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wai-Sing Louie whose telephone number is (571) 272-1709. The examiner can normally be reached on 7:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Wsl
April 12, 2007.


WAI-SING LOUIE
PRIMARY PATENT EXAMINER